Exc:-2 Study of different types of Network Cables

Aim: To understand different types of network cables.

Different types of cables used in networking are

i) Unshielded twisted pair (UTP) Cable
ii) Shielded Twisted pair (STP) Cable
iii) Coaxial Cable
iv) Fibre Optic Cable.

Cable type	Category	Maximum Data Transmission	Advantages / Disadvantages	Application/ Use
UTP	category 3	10 bps	Advantages • Cheaper in cost • Easy to install as they have a small diameter Disadvantage • More prone to (EMI)	10 base T Ethernet
	Category 5	Up to 100 Mbps		Fast ethernet
	Category 5e	1 Gbps		Gigabit Ethernet

STP	Category 6, 6a	10 Gbps	Advantages • Shielded • Faster than UTP • Less susceptible Disadvantage • Expensive • Greater installation effort	Gigabit Ethernet 10 Gb Ethernet (55) 100) Gigabit Ethernet 10 Gb Ethernet (100 m)
SSTP	Category 7	10 Gbps		
Coaxial cable	RG-6 RG-59 RG-11	10-100 Mbps	Advantages: • High bandwidth • versatile • low loss & bandwidth Disadvantage: • Limited distance • Cost	Speed of signal is 50 m television network high speed internet
Fibre Optics Cable	Single mode multi mode	100 Gbps	Advantages • High speed • High Security • Long distance Disadvantage: • Expensive • Require skilled installer	• Maximum distance of fibre optic cable is around 100 metre

Student observation:-

1) What is the difference between cross cable and straight cable?

Ans: Straight cable: wires on both ends have the same pin configuration and used to connect different types of devices

Cross Cable: The wires are crossed and used to connect similar devices

2) Which type of cable is used to connect two PC?

Ans Cross Cable

3) Which type of cable is used to connect a router/switch to your PC?

Ans Straight Cable

4) Find out the categories of twisted pair cable used in your LAN to connect the PC to the network device/socket.

Ans) Cat 5e (Category 5e) - Supports speed up to 1G

Cat 6 (Category 6 e) - Supports speed up to 10G ~~Possible~~ to for a shorter distance.

The study of different types of cables have been conducted successfully

5) Write down your understandings, challenges faced, and output recieved while making a twisted pair cross/ straight cable

Ans Understanding:

- A twisted pair cable has 8 wires in 4 color-coded pairs.
- Making a straight cable uses same wiring standard
- Making a cross cable uses different standards on each end
- Proper sequence and insertion into RJ45 connectors is crucial.

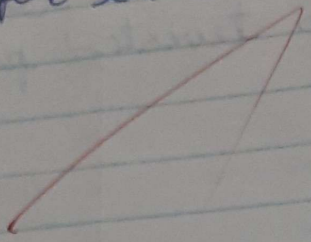
Challenges Faced:

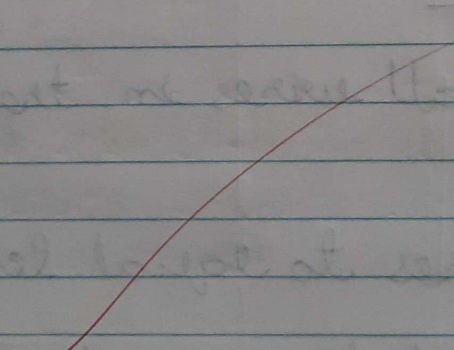
- Aligning the small wires in the correct color order.
- Cutting the wires to equal length
- Inserting wires fully into the RJ45 connector.

Output recieved:

- Successfully created a cable.
- Tested using a LAN tester - all lights glowed in correct sequence.

- Used to connect two devices and verified data transfer or internet connectivity.





Result:

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